The Mechanism of Dioxygen Activation by Heme-thiolate (Cytochrome P450) Proteins

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A variety of experimental data suggest that in cytochrome P450-dependent monooxygenases the transfer of the oxygen atom into substrates is linked to the presence of a thiolate ligand in trans position of the oxo-ferryl-heme. In support of this hypothesis we now report that the activation of the O-O-bond in 9,11-endoperoxy-15-hydroxy-arachidonic acid to yield prostacyclin and thromboxane, respectively, is also dependent on a heme-thiolate catalytic site of the corresponding isomerases.

Measurement of and antioxidant protection from in vivo lipid peroxidation.

Al Tappel

Measurements of expired pentane have allowed progress in studies of in vivo lipid peroxidation. Studies include: antioxidant nutrient deficiencies, a wide range of oxidant toxicities, and a number of diseases. Recent results are: 1. Vitamin E reduces in vivo lipid peroxidation resulting from injection of methyl ethyl ketone peroxide. 2. Use of iron-loaded rats having sustained high level lipid peroxidation showed that antioxidants can be ranked in in vivo effectiveness as: diphenyl phenylenediamine > ethoxyquin > butylated hydroxyanisole > butylated hydroxytoluene > propyl gallate ≈ no antioxidant. 3. Inhibitors of in vivo lipid peroxidation in vitamin C-deficient guinea pigs include: vitamin C, isoascorbic acid, reduced glutathione, α-tocopherol, β-carotene and mannitol.

Source: https://www.industrydocuments.ucsf.edu/docs/mgkv0000